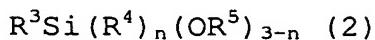


CLAIMS

1. A composition for forming porous film, comprising
a surfactant and
a solution comprising polymer obtainable by
hydrolyzing and condensing, in the presence of the surfactant,
one or more of alkoxy silane represented by Formula (1) and
one or more of alkoxy silane represented by Formula (2):



wherein R¹ represents a monovalent hydrocarbon group which may be substituted or non-substituted and when there are R¹s, the R¹s may be independently same or different; R² represents an alkyl group having 1 to 4 carbons and when there are R²s, the R²s may be independently same or different; R³ represents a straight chain or branched alkyl group having 8 to 30 carbons; R⁴ represents a monovalent hydrocarbon group which may be substituted or non-substituted and when there are R⁴s, the R⁴s may be independently same or different; R⁵ represents an alkyl group having 1 to 4 carbons and when there are R⁵s, the R⁵s may be independently same or different; m is an integer of 0 to 3; and n is an integer of 0 to 2.

2. The composition for forming porous film according to Claim 1 wherein said surfactant is a compound which decomposes, evaporates or sublimes when heated to 400°C or

less.

3. The composition for forming porous film according to Claim 1 or 2 wherein said one or more of alkoxy silane represented by Formula (2) are of 0.01 to 10 parts by weight toward 100 parts by weight of said one or more of alkoxy silane represented by Formula (1).

4. The composition for forming porous film according to any one of Claims 1 to 3 wherein said one or more of the alkoxy silane represented by Formula (1) are tetraalkoxy silane and the other compound or compounds; and an amount of the tetraalkoxy silane is 10% by weight or more in said alkoxy silane represented by Formula (1).

5. The composition for forming porous film according to any one of Claims 1 to 4, comprising a compound which is neutral at ordinary temperature and generates acid or alkali at 80 to 200°C.

6. A method for forming porous film comprising a step of applying said composition of any one of Claims 1 to 5 on a substrate to form film and a step of transforming the film into porous film.

7. The method for forming porous film according to Claim 6 wherein said step of transforming comprises a step of drying said film and a step of removing said surfactant from the dried film.

8. The method for forming porous film according to Claim

6 or 7 wherein said step of transforming comprises heating at 150 to 400°C.

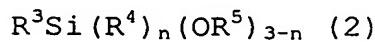
9. A porous film obtainable from said composition of any one of Claims 1 to 5.

10. An interlevel insulator film formable by said composition of any one of Claims 1 to 5.

11. A semiconductor device comprising internal porous film which is formable by a composition for forming porous film, comprising

a surfactant and

a solution comprising polymer obtainable by hydrolyzing and condensing, in the presence of the surfactant, one or more of alkoxy silane represented by Formula (1) and one or more of alkoxy silane represented by Formula (2):



wherein R¹ represents a monovalent hydrocarbon group which may be substituted or non-substituted and when there are R¹s, the R¹s may be independently same or different; R² represents an alkyl group having 1 to 4 carbons and when there are R²s, the R²s may be independently same or different; R³ represents a straight chain or branched alkyl group having 8 to 30 carbons; R⁴ represents a monovalent hydrocarbon group which may be substituted or non-substituted and when there are R⁴s, the R⁴s may be independently same or different; R⁵ represents

an alkyl group having 1 to 4 carbons and when there are R⁵s, the R⁵s may be independently same or different; m is an integer of 0 to 3; and n is an integer of 0 to 2.

12. The semiconductor device according to Claim 11, wherein said surfactant is a compound which decomposes, evaporates or sublimes when heated to 400°C or less.

13. The semiconductor device according to Claim 11 or 12 wherein said one or more of alkoxy silane represented by Formula (2) is of 0.01 to 10 parts by weight toward 100 parts by weight of said one or more of alkoxy silane represented by Formula (1).

14. The semiconductor device according to any one of Claims 11 to 13 wherein said one or more of the alkoxy silane represented by Formula (1) are tetraalkoxy silane and the other compound or compounds; and an amount of the tetraalkoxy silane is 10% by weight or more in said alkoxy silane represented by Formula (1).

15. The semiconductor device according to any one of Claims 11 to 14, comprising a compound which is neutral at ordinary temperature and generates acid or alkali at 80 to 200°C.

16. The semiconductor device according to any one of Claims 11 to 15 wherein said porous film is between metal interconnections in a same layer of multi-level interconnects, or is between upper and lower metal interconnection layers.